IMPLEMENTATION THE ETHNOSCIENCE-BASED SMART MODULE TO IMPROVE STUDENTS' PATRIOTISM

S. D. Ardianti*[1], S. Wanabuliandari[2], A. B. Tanghal[3]

[1]Elementary Educational Teacher Department, Universitas Muria Kudus, Indonesia
[2]Mathematics Educational Department, Universitas Muria Kudus, Indonesia
[3]Nueva Ecija University of Science and Technology, Philippines

ABSTRACT

Patriotism begins to fade in the younger generation of Indonesians. The loss of patriotism will cause concern for the nation. Thus, there must be innovation in teaching to cultivate patriotism. The ethnoscience-based smart module helps students learn independently in a fun way and contributes to improving their patriotism. This study aims to analyze the improvement of students' patriotism through implementing the ethnoscience-based smart module. This research used the research and development (R & D) model by Borg and Gall. The research and development stages of ethnoscience-based smart modules included preliminary research, product development and validation, and product testing. The study was conducted in three primary schools in Kudus. The research design used in this study was a single-group pretest and posttest design. The data were analyzed using the N-gain test to determine the improvement of students' patriotism. The results of the N-gain test show an increase in patriotism, with an average initial score of 50 increasing to an average final score of 80, and classically, the normalized gain value is 60% or 0.60, which means an increase in the medium category through the application of the ethnoscience-based smart module. Based on research results, it can be concluded that implementing an ethnoscience-based smart module can improve students' patriotism in elementary schools.

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Keywords: character love of the country; elementary students; ethnoscience smartmodule

INTRODUCTION

The development of a nation can be seen through the development of character in its people. Character formation is important because the character of a nation will affect its dignity and progress of a nation (Ardianti & Wanabuliandari, 2017; Pradana et al., 2020). The first president of Indonesia, Soekarno, states that Indonesia's dignity, progress, and glory depend heavily on building the character of the Indonesian nation. Character building in Indonesia is set forth in Law No. 20 of 2003 regulating the National Education System (3), which asserts that natio-

nal education develops abilities and cultivates the character and culture of a dignified nation in order to serve the nation. However, in the contemporary digitalization era, the Indonesian government still faces challenges in character building. This is because, in the digitalization era, everyone may easily and swiftly broadcast and access information all across the world. Patriotism is one of the characters whose development is hampered. A patriotic character is a way of thinking, behaving, and acting that shows loyalty, caring, and high appreciation for language and the environment (Kemdikbud, 2013). According to this statement, patriotism is a way of thinking, doing, and exhibiting devotion, concern, and profound respect for a nation's language, physical surroun-

dings, social culture, and politics (Telaumbanua, 2014; Supriadi, 2020). Patriotism has begun to fade in the younger generation of Indonesians. Various challenges and obstacles that come from outside are very dangerous for the condition of the character of Indonesian youth (Kurniawaty et al., 2022). According to the findings, the ordinary Indonesian is more interested in visiting abroad than in traveling within Indonesia. As a result, the government should place a greater emphasis on the early development of patriotic character.

Even if only religious and civics subjects are used, instilling a sense of patriotism in students is not optimal. The government seeks to implement character education by integrating all subjects under the 2013 curriculum applied in Indonesia. The development of the 2013 curriculum is expected to be the answer to increasing the ability of human resources in Indonesia to face world changes (Amila et al., 2018). Government efforts need to be supported by learning devices tucked into character education, especially patriotism.

The government is trying to bring up elements of culture and traditional arts to be re-introduced to society, including children. Various kinds of local culture can be used as teaching materials for students. Ethno learning is a learning approach by utilizing local culture as learning materials. Introducing local culture to students and adding insight and knowledge also helps foster the students' patriotism. Children develop character through what they see, what they hear, and what they do over and over again (Lickona, 2012; Arfianawati et al., 2016). A supportive environment for children to behave well continuously will form a good character in the child. Good behavior needs to be instilled in the younger generation.

Elementary school is when a child's brain imitates what adults do (Misbach, 2007). Furthermore, elementary school is when children choose to play rather than learn. This is based on the characteristics of children, one of which is that they enjoy playing. Ethnoscience is a learning approach that encourages learners to learn by relating topics to the surrounding local culture. Ethnoscience-based learning is enjoyable and meaningful for students. Using appropriate learning tools with students can boost their memory during the learning process (Yuh-Tyng et al., 2011; Novitasari et al., 2017; Anwar et al., 2017; Sudarmin et al., 2017). Ethnoscience is an approach that incorporates elements of entertainment or fun while remaining true to the learning objectives. Students can apply their learning di-

rectly to natural ailments and social problems by participating in fascinating and enjoyable activities. Learning like this is expected to foster the attractiveness and enthusiasm of learners toward lessons (Ardianti & Raida, 2022).

One of the learning devices that is directly related to students is teaching materials. Existing teaching materials should not only be a collection of knowledge but also be accompanied by fun activities that can develop the potential of learners and instill character in students. Printed, audio, video, or interactive teaching materials are all options (Prastowo, 2011). The module is one of the teaching materials packaged completely and systematically (Daryanto, 2013 cited in Rahayu & Sudarmin, 2015). According to Rivera & Tanghal (2021), the module's purpose is to equip educators with materials that will allow them to turn their classrooms into active learning environments focused on the requirements of the students. In the form of smart modules, the modules generated can make use of multimedia learning technology. This needs to be done because using smart modules can allow learners to access learning in the era of digitalization more easily. In accessing learning, learners can use smartphones, gadgets, laptops, and computers to allow them to open modules anywhere and anytime. Through e-modules, students get direct feedback and gain complete material mastery (Syamsurizal et al., 2015). Thus, with the smart module, learners can learn anywhere and anytime, which will facilitate the learning process.

The results of the preliminary study questionnaire from ten elementary school teachers in Kudus Regency show that overall, the teaching materials used are printed and lack the features of character-charged teaching materials based on local culture. The incorporation of local culture into learning materials can be packaged as a smart module in teaching materials. The ethnoscience-based smart module will provide meaningful learning, be fun, and instill patriotism by introducing local culture.

The infusion of local culture will have a favorable impact on students' intellectual growth. Introducing local culture will help students relate the real conditions in the environment to the material being taught so that learning is more meaningful. Effective culture-based learning helps students learn about the environment to make it more meaningful (Dunlosky et al., 2013 cited in Damayanti et al., 2017). Learning becomes more meaningful when guided by the materials in life (Villagonzalo, 2014). This local culture has the potential to promote patriotism. This is because

local culture is a part of national culture, which, if properly cultivated, may promote patriotism. To create a patriotic character, it is vital to incorporate local culture into classroom curriculum.

Utilizing local cultures that are part of the culture of this nation can be included in learning resources such as modules. Through the modules, students can learn independently according to their abilities. Integrating local culture into the module will help to foster patriotism. Teaching materials based on local culture can help teachers get students engaged in and committed to the learning process since they are closely tied to everyday life (Andriana et al., 2017). Connecting regional excellence with teaching materials will assist students accomplish their learning objectives (Khoiri, 2016). According to Martawijaya et al. (2023), integrating local knowledge with science principles will increase students' conceptual comprehension inside and outside of the classroom. Modules can also be used digitally as e-modules, digital, or smart modules. Thus, smart modules can help students learn independently anytime and anywhere.

In addition, to make learning more fun, an ethnoscience approach can be used. This approach helps make learning fun and interesting by connecting concepts with local culture. The concept of ethnoscience is included in learning content through practicum activities, games, specific activities, and other fun activities with surrounding local culture. The fun activities carried out will be related to the improvement of patriotic character. Ethnoscience is a culture's indigenous knowledge that is related to scientific knowledge or is known as nation-owned knowledge (Abonyi et al., 2014; Parmin et al., 2017).

Knowledge possessed by a nation, community, ethnicity, tribe, or other social group is known as ethnoscience (Syarifudin, 2017). Ethnoscience is a learning process that combines education with the surrounding culture to make learning more exciting (Katsaliaki & Mustafee, 2015). The goal of ethnoscience is to engage students in learning by exposing them to and entertaining them with the surrounding culture (Kusmarni et al., 2016). To boost student learning achievement, an ethnoscience-based module must be developed (Novitasari et al., 2017; Usman et al., 2019). Through education, learning does not feel dull. Thus, the ethnoscience-based smart module helps students to learn independently whenever and wherever and improves their patriotic character. The ethnoscience-based smart module tailors learning materials to the conditions in the students' environment, ensuring

authentic learning (Ardianti et al., 2023). Smart modules can assist students learn about the local culture and boost their patriotism.

Based on the description, this study aims to analyze the improvement in the patriotic character obtained from direct experience since students learn with the ethnoscience-based smart module. The materials on this ethnoscience-based smart module use local culture and local wisdom, especially from Kudus, because students are attractive and have fun when learning using electronic media. Also, this smart module was the first time developed. Thus, this study can be utilized as a foundation for future studies based on ethnoscience but studying various characteristics of the students.

METHODS

This research used the research and development (R & D) model proposed by Borg and Gall. Research and development is a powerful strategy for improving practice to develop and validate educational products (Borg & Gall, 1983). The research and development stages of the ethnoscience-based smart module included preliminary studies, product development and validation, and product trials. The product trial stage included a limited-scale and a wide-scale test. A wide-scale test was conducted to analyze the effectiveness of the ethnoscience-based smart module in increasing the students' patriotism. This effectiveness test was conducted in elementary schools in Bae District, Kudus Regency. The elementary schools have characteristics of high-grade elementary school students, with 71 students. Students in high-grade elementary school have the characteristics of learning using digital devices. The research design used in this study was a single-group pretest and posttest design. Data on patriotism in this study was obtained using a non-test technique. The questionnaire instrument contained 20 items following the indicators of patriotism. The Normalized-gain (N-gain) test was used to quantitatively analyze the data to determine the rise in elementary school students' patriotism.

The Normalized-gain test was conducted to determine how much the patriotic character increased before and after learning using the ethnoscience-based smart module. Increased understanding of concepts based on pretest and posttest scores can be calculated using the N-gain $<g>$ formula.

Additionally, the obtained N-gain value $<g>$ is translated following the N-gain $<g>$ criteria shown in Table 1 (Hake, 1998) as follows.

Table 1. Normalized Gain <g Gain Criteria>

Normalized gain <g>	Criteria
<g> < 0,3	Low
0,3 ≤ <g> < 0,7	Medium
<g> ≥ 0,7	High

RESULTS AND DISCUSSION

This research was conducted to determine patriotism through the ethnoscience-based smart module application. The module was implemented in grade 4th at elementary schools in the Bae District. Elementary school students were previously given questionnaires to measure their patriotism. After that, it continued with the implementation of the ethnoscience-based smart module. Then, at the end of the research activity, a questionnaire was given. Students were given a questionnaire on patriotism before learning using the ethnoscience-based smart module to determine their initial scores for patriotism. Table 2 shows the scores of the character of the patriotism questionnaire in the three elementary schools.

Table 2. Score Recapitulation of Students' Patriotism through Learning Using the Ethnoscience-Based Smart Module

Component	Initial score	Final score
Average	50	80
Highest score	75	92
Lowest score	40	60

The results of the initial scores and final scores at the three elementary schools showed that all three experienced an increase after learning using the ethnoscience-based smart module application. There is an increase based on the scores of the patriotic character before and after learning using the ethnoscience-based smart module. The N-gain test analyzed the increase in students' patriotism. The recapitulation of the N-gain test results is presented in Table 3.

Table 3. Recapitulation of Percentage (%) of N-gain Test Results for Students' Patriotism Through Learning Using the Ethnoscience-Based Smart Module

Category	Percentage (%)
High	36,8
Medium	49,7
Low	13,5

This shows that the ethnoscience-based smart module application can increase students' patriotism. The module is developed because it can make it easier for students to understand what is being learned according to their abilities (Luo & Park, 2020). In the learning process, students are helped by innovative modules by feeling the positive impact of the module and by increasing student character (Niron et al., 2013; Wanabuliandari et al., 2019). The module can be modified by inserting ethnoscience content or local cultural elements, which are the basis of the nation's culture, making it easier for students to love their country (Ardianti et al., 2019). In addition, using modules in the learning process creates feedback between students and what is learned to increase character values (Sitorus et al., 2019). Characters are integrated into the module so that students can internalize their patriotism (Oktaviyanti et al., 2021).

Students use the ethnoscience smart module application in groups. This is because elementary school students are not allowed to bring smartphones to school. Ethnoscience-based learning can be done in a fun way through collaborative or group activities using the module (Dewi et al., 2021). In addition, ethnoscience or local culture-oriented modules are needed in the learning process to create active learning (Ardianti et al., 2019).

Students access the ethnoscience-based smart module directly using a smartphone with guidance from the teacher. The ethnoscience module adapts to technology as teaching material that helps students learn more easily (Ardianti & Wanabuliandari, 2021). Through ethnoscience-based module applications, students are free to learn while playing, learn without pressure, and become more active (Setyaningsih & Dewi, 2015; Ardianti & Wanabuliandari., 2017). The teacher can control student learning activities using the ethnoscience-based smart module, especially in the evaluation section on the teacher's laptop. After the students have completed all the learning activities using the ethnoscience-based smart module, they will retake the patriotism questionnaire to check the increase in their patriotism scores.

The ethnoscience-based smart module application used in learning emphasizes integrating local culture into learning materials. The module on linking culture aims to create meaningful learning (Ardianti et al., 2019). Integrating local culture into the learning materials in the ethnoscience-based smart module application will help grow patriotism. The ethno-content module integrates local culture, making it easier

for students to grow patriotism (Ardianti et al., 2019). Cultivating patriotism can be done by introducing local culture. Love for local culture can be obtained from modules based on local culture and local wisdom (Wati et al., 2020). Existing local values are a strategic function to shape and strengthen character in the learning process (Darong et al., 2021).

Local culture is part of the nation's culture that must be preserved. Local culture is relevant to experience and knowledge related to local culture as a source of reflection in action (Alakrash et al., 2021). Local culture is essential and should be preserved in every generation (Harvey, 2015). Local culture must be preserved to grow patriotism in Indonesia (Wanabuliandari, 2016). A patriotic character is obtained through direct experience from the environment that has a positive impact (Ardianti et al., 2019). It is needed for every level of society, especially students, where this character can be created through a culture-based learning process. Local culture-based learning is effective in helping students get to know their environment better (Dunlosky et al., 2013).

Using the ethnoscience-based smart module application presents the learning process in an exciting and fun way by connecting student learning materials with cultural content in the surrounding environment to increase patriotism. The formation and improvement of character can be made by integrating local culture within the scope of the learning process (Darong et al., 2021). Therefore, the ethnoscience module helps students instill and improve character in a fun way (Ardianti & Wanabuliandari, 2017). This exciting and fun learning is suitable for elementary school students considering their nature is to play.

Table 3 shows that the students' patriotism in three elementary schools used as a model class for using the ethnoscience-based smart module application increases to the medium category. The N-gain value is 0.60 or 60%, indicating that the interpretation of the rise in patriotism is medium. Students' patriotism increases due to the application of the ethnoscience-based smart module in learning. The ethnoscience-based smart module integrates local cultures into learning materials, packaging them into fun activities. Furthermore, Tanghal & De Leon (2022) state that the contextualization principle always coincides with the learner-centeredness approach. The most important learning competencies must conform to the needs of the learners. Utilization of local culture, which is part of the nation's culture, can be included in learning resources such as modules. Through the module, students can learn independently according to their abilities. The module is an alternative and systematic means of providing information and has an essential function for students (Kintoko & Jana, 2019). Related to this, the module provides benefits and feedback through student learning outcomes that are obtained systematically (Ardianti & Wanabuliandari, 2017). The presentation of the ethnoscience module requires proper planning and stages of manufacture so that the attractiveness of the material content is truly high quality (Allwright, 1981; Wanabuliandari, 2016). The attractiveness of the content of this module is realized through local culture in modules. It plays a role in growing patriotism. The module based on ethno-content helps students and teachers instill patriotism (Ardianti et al., 2019). Since Indonesia is a multicultural country, ethnoscience-based modules can build and develop a patriotic character by adding local cultural materials to learning (Yunus, 2013; Wanabuliandari et al., 2018).

Besides integrating local culture, the ethnoscience-based smart module application has fun activities. This fun activity is adapted to the characteristics of elementary school students so that it helps to grow patriotism. From the Greek words "*ethnos*," which means "nation," and "*scientia*," which means "knowledge," comes the term "ethnoscience." Ethnoscience is a tool for learning that incorporates local knowledge of the student environment. The capability of ethnoscience will ease students to investigate current realities and peculiarities existing in the public arena and be coordinated them with scientific knowledge (Sudarmin et al., 2017; Melyasari et al., 2018). Teachers can easily focus students' attention and make learning more interesting by utilizing local advantages suitable for daily life (Ardianti et al., 2021). It can make students interested in learning through learning and entertainment (Kusmarni et al., 2016). Thus, the ethnoscience-based smart module helps students to learn independently wherever and whenever through fun entertainment with a focus on introducing patriotism.

CONCLUSION

The results of the initial score and final score at the three elementary schools show that all three experience an increase after the learning is carried out using the ethnoscience-based smart module. The N-gain test examines the increase in patriotism to determine the improvement category. The N-gain values of the three elementary schools show the interpretation of increasing patriotism in the medium category. This research

can be used as a basis for conducting other studies based on ethnoscience but analyzing different characteristics of the students.

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